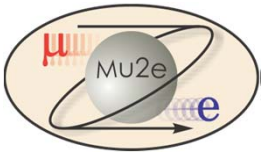
Fermilab

U.S. DEPARTMENT OF ENERGY Office of Science

Mu2e CD-2 Life Safety Review



Jim Niehoff
ES&H (Fire Protection) Safety Specialist
7/8/2014

Requirements (Objectives)

- Provide successful evacuation
- Provide effective fire fighting and rescue operation
- Limit spread of fire and smoke
  - Fire suppression systems
  - Fire alarm systems
  - Smoke abatement

Requirements (Determined)

- AON's recommendations are based on codes/orders/standards:
  - DOE Order 420.2C Safety of Accelerator Facilities
  - IBC (International Building Code)
  - IFC (International Fire Code)
  - NFPA (National Fire Protection Association)
- Aim of Life Safety
  - Get the occupants out (egress)
  - Get the fire fighters personnel in (ingress)
- Fire Protection approach is based on experience from previous projects at the laboratory

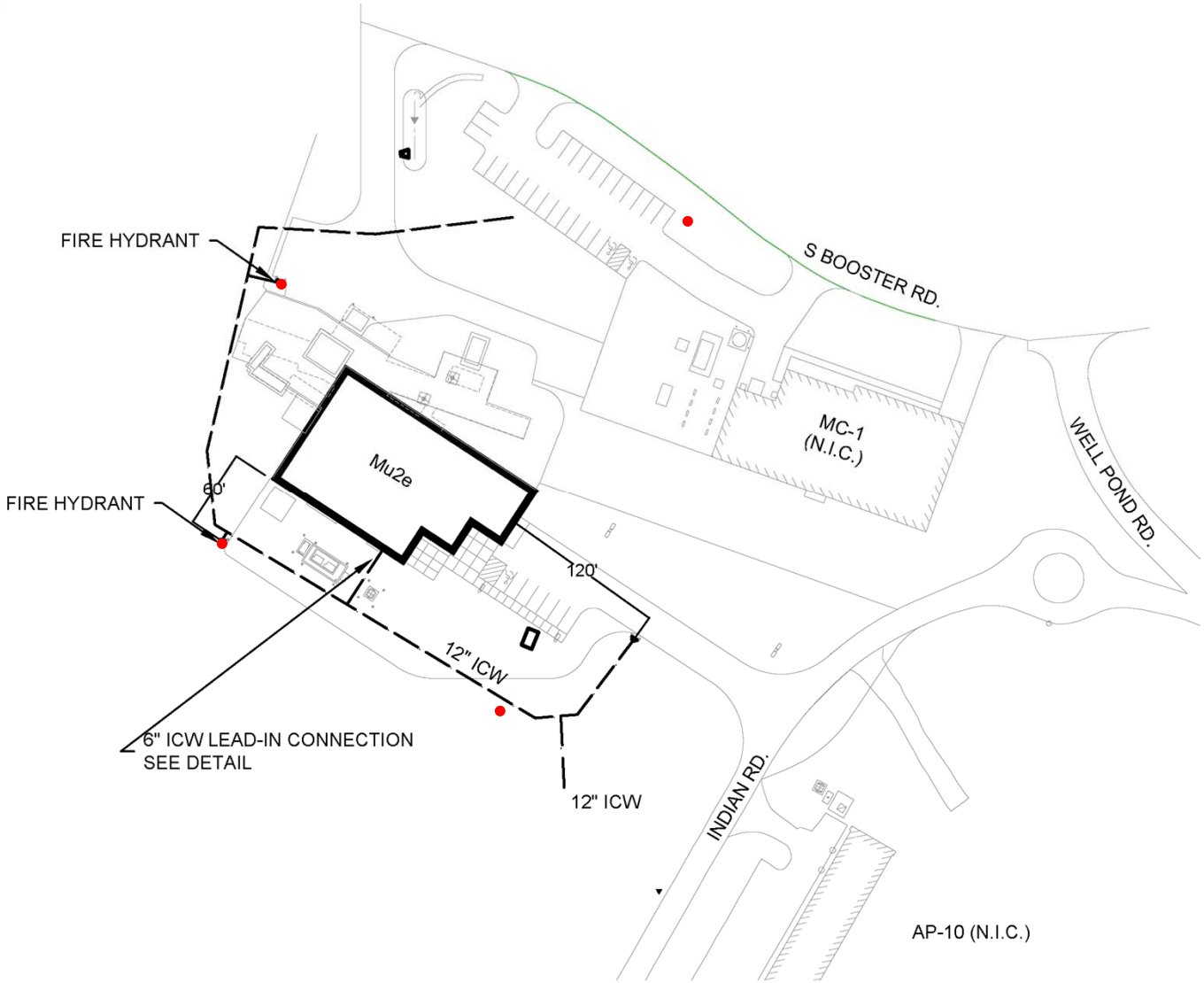
Design

- Less than 30 feet below level of exit discharge, omitting the requirements for smoke control and stairway pressurization
- Two Exit stairways enclosed by 2 hour fire rated construction
- Means to separate Enclosure from Detector Hall
- Maximum travel distance 300 feet
- Minimum aisle width 36 inches
- Automatic fire sprinkler system, preaction type (Detector Hall)
- Linear heat type detection
- Beam Type Smoke Detection & Spot Type Detection
- Air sampling smoke detection
- Manual pull stations

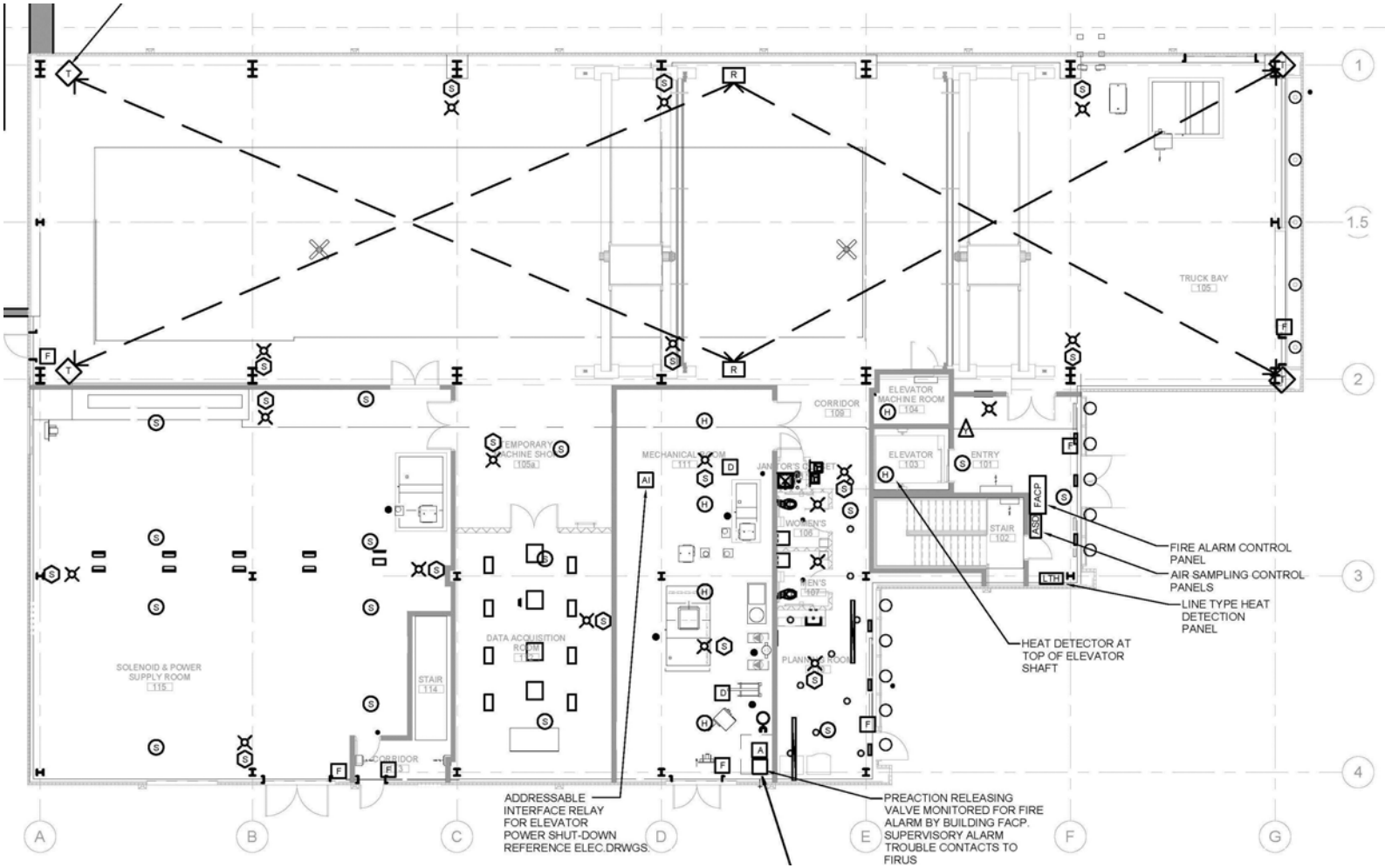
Design Continued

- Fire Alarm will have Emergency Voice Alarm system enable to interface with Fermilab's Site-wide Emergency Warning System
- Emergency and exit signage
- Emergency/Standby power systems
  - Fire alarm system
  - Exit signs
  - Emergency Lighting
  - Elevator
  - Sump System

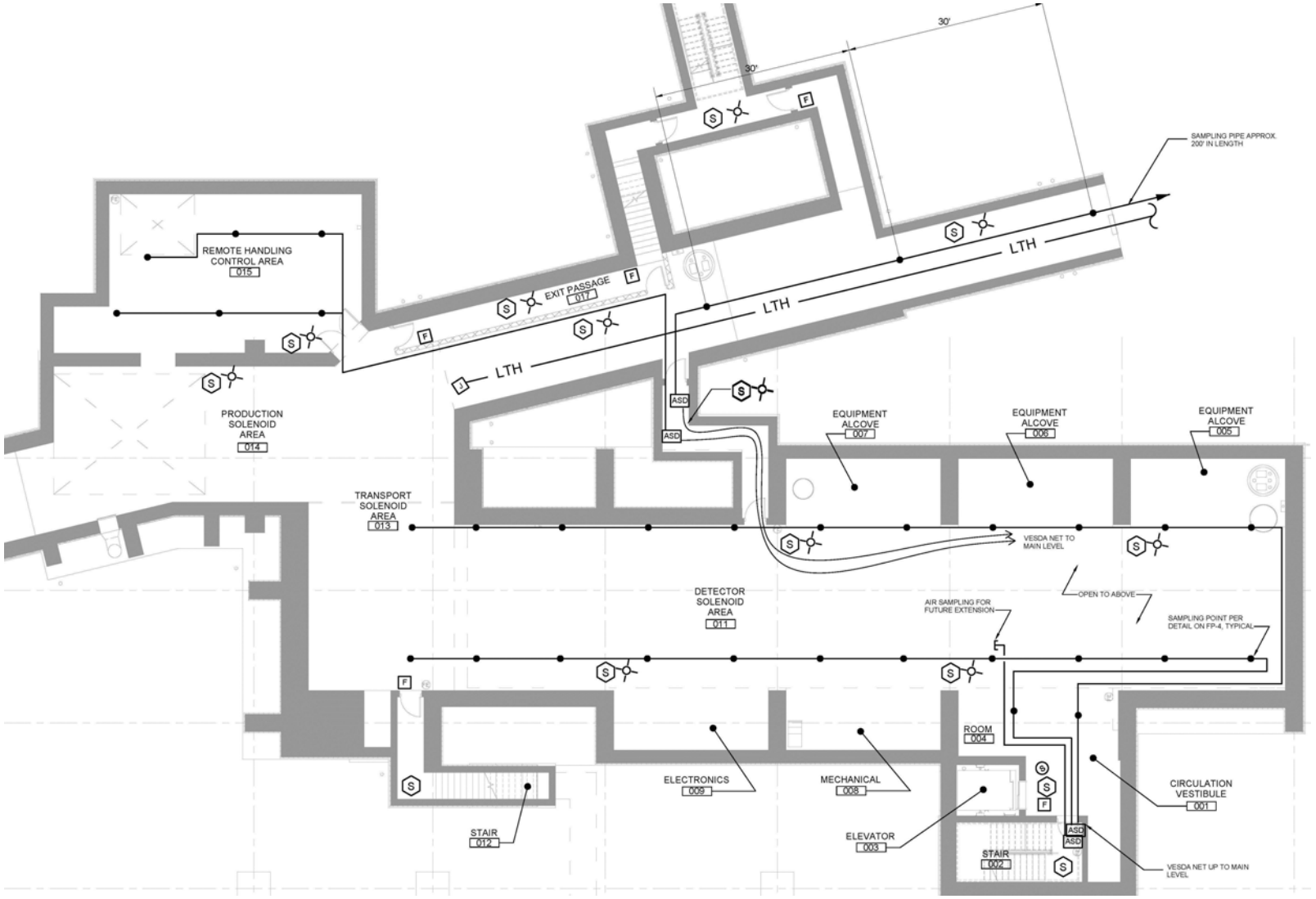
DESIGN (Site Plan)



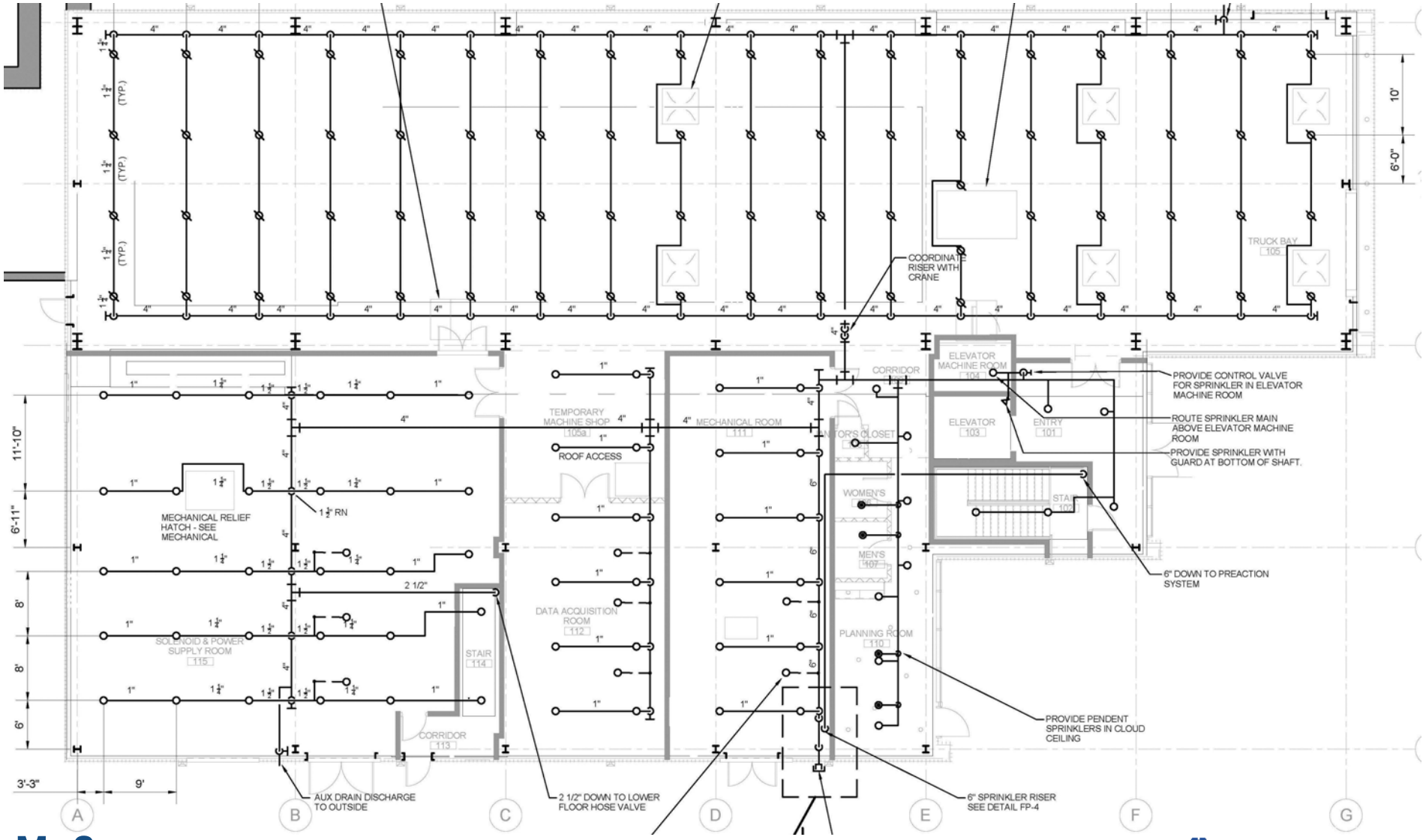
Fire Detection – Main Level



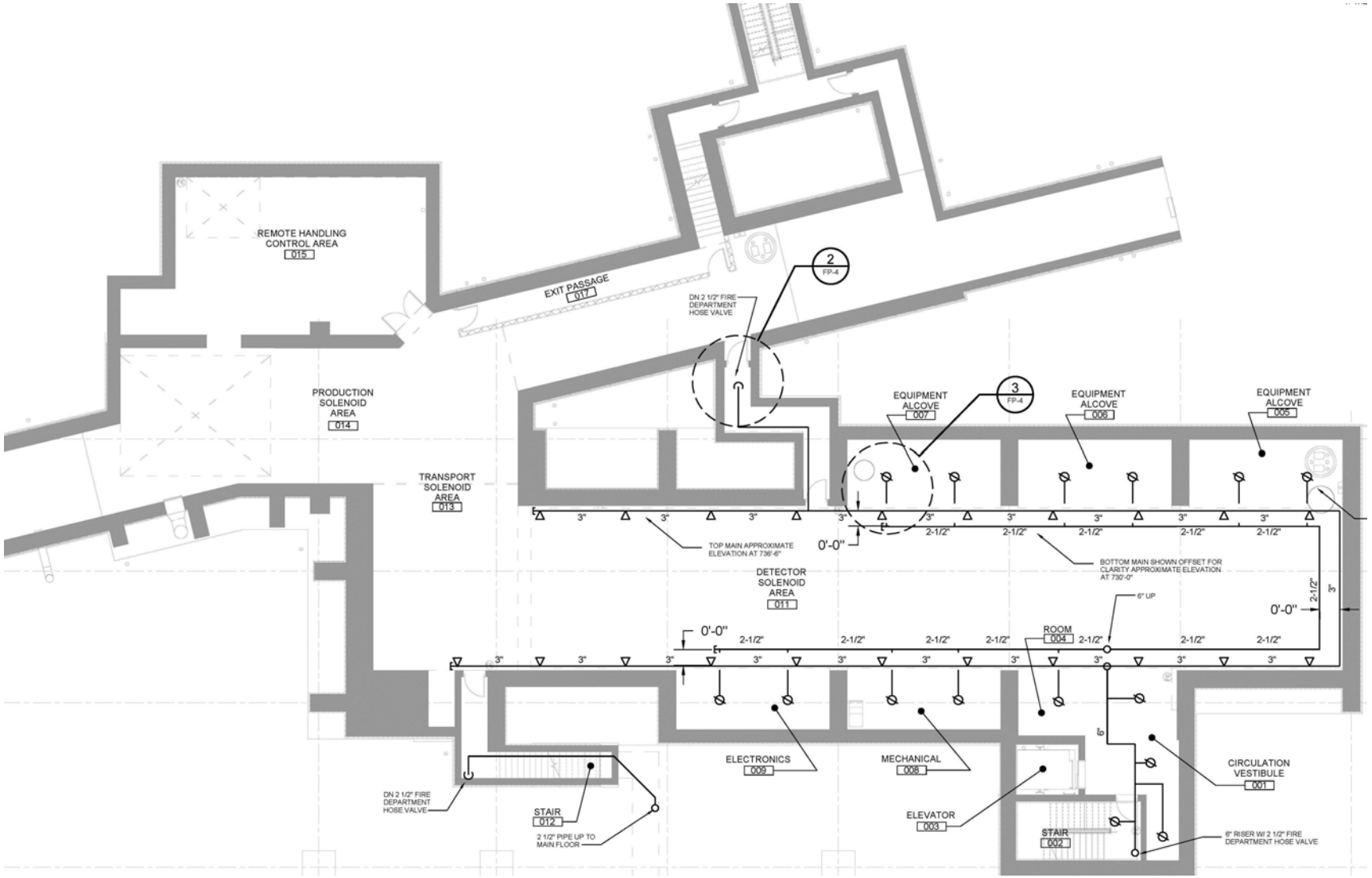
Fire Detection – Lower Level



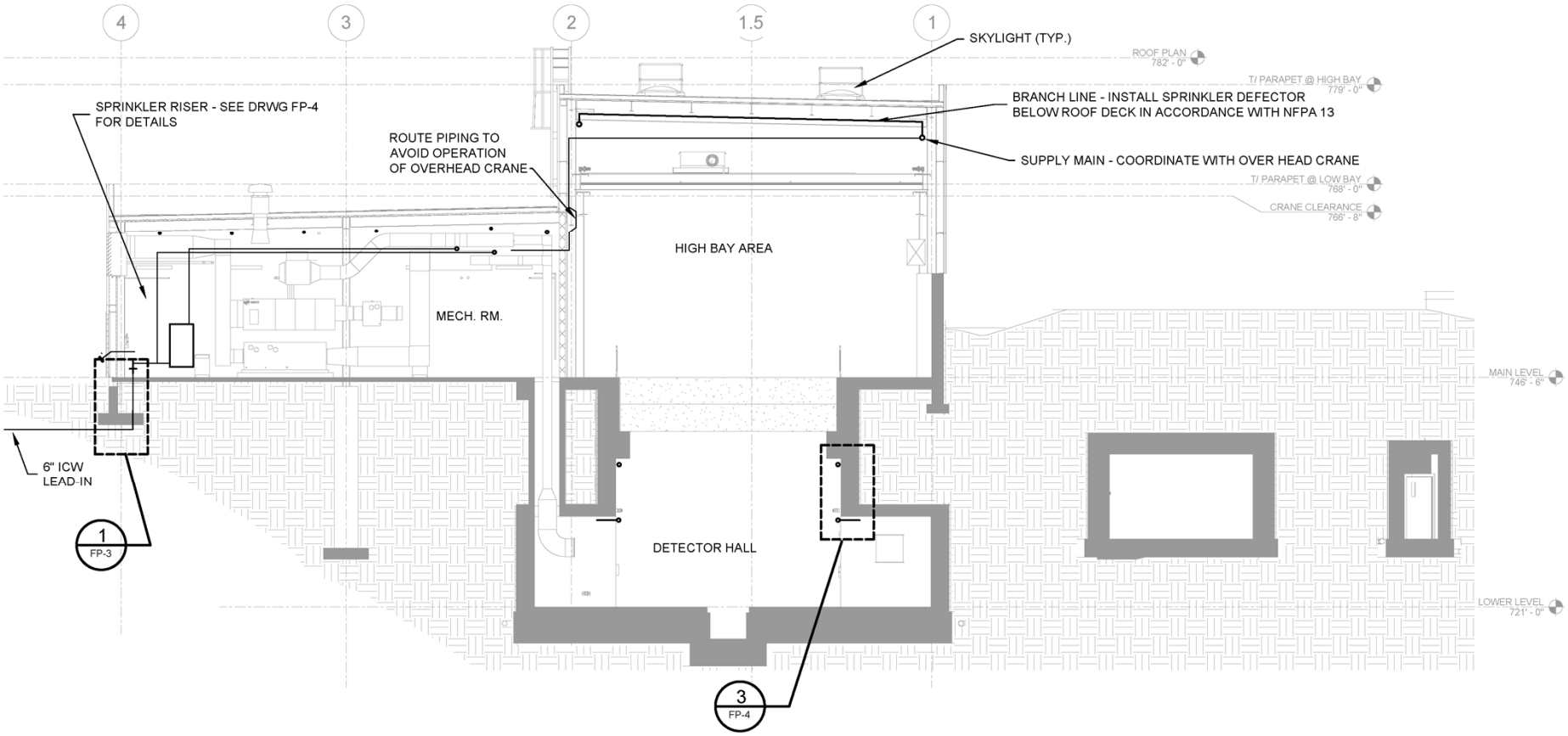
Fire Suppression – Main Level



Fire Suppression – Main Level



Design (Section View)



Design (Detector Hall Detail)